

## Original Research Article

# Perinatal outcomes of free maternity services in Mama Lucy Kibaki Hospital, Nairobi County, Kenya

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**Received:** 07 August 2020

**Revised:** 28 August 2020

**Accepted:** 01 September 2020

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### ABSTRACT

**Background:** The introduction of free maternity services in all public healthcare facilities in Kenya was the government's initiative to decrease maternal morbidity and mortality and promote sustainable health for both the mother and infant. Maternal health is significant in the achievement of Government of the Republic of Kenya (GOK) vision 2030. In order to determine the level of implementation of free maternity services in Kenya, it is important to understand perinatal outcomes.

**Methods:** The study adopted a cross-sectional descriptive survey design involving all women seeking free delivery services at Mama Lucy Kibaki Hospital. Data was collected using both open-ended and closed-ended questions.

**Results:** The study findings showed an increase in maternal seeking behaviour, increase quality of care and increase in good perinatal outcomes. Further, the study showed that although free maternity services (FMS) was literally accessible to mothers, 60.2% sought antenatal care (ANC) services in the second semester while majority failed to meet the World Health Organization (WHO) recommended number of ANC visits per cycle. The study also showed that 88.5% of the women did not suffer serious comorbidities during pregnancy. However a total of 65.4% suffered anaemia with 80% of those who suffered being primigravidae.

**Conclusions:** The study concluded that FMS has contributed to improved perinatal outcome and it recommended that pregnant women be sensitized on the importance of seeking ANC services immediately they are diagnosed pregnant, and further that the county government of Nairobi should boost the hospitals with supplies, equipment and human resource specifically nurses, so as to cope with the increased workload.

**Keywords:** Perinatal, Maternal health, Maternity services, Antenatal care

### INTRODUCTION

Perinatal outcome refers to the product of a pregnancy at term and extends to a baby's condition up to one week post-delivery. Poor outcomes cause pain and suffering to the affected mothers and their families, they remain common pregnancy outcomes especially in developing countries.<sup>1-3</sup> Approximately, 97-99% of the estimated 4 million stillbirths and 3 million neonatal deaths that occur each year globally occur in low and middle-income countries.<sup>4,5</sup> Some risk factors associated with poor perinatal outcomes

include: intra-partum complications, maternal infection in pregnancy and maternal disorders (such as hypertension and diabetes). Fetal risk factors associated with perinatal death include: preterm birth, low birth weight, intra-partum complications and neonatal infection.<sup>5,6</sup>

In order to improve maternal, infant and perinatal outcomes in Kenya, the first lady of Kenya Margret Kenyatta launched beyond Zero campaign on 24 January 2014 in Nairobi, with the aim of promoting the access to quality maternal and neonatal health care. Following the

launch health facilities in Kenya were overwhelmed by patients seeking free maternity service.<sup>7</sup> Sub Saharan Africa as a whole lags behind other developing regions in the address of perinatal health. For instance, in Nigeria, there is lack of sufficient data on perinatal mortality. Oti and Odimegwu indicates that out of 5,783 live births between 2006 and 2011, an average of 194 perinatal deaths occurred every seven days after delivery.<sup>8</sup>

Perinatal mortality rate in Kenya in 2003 was 40/1000 live births (LB). The rates decreased to 37 per 1000 LB by the year 2009.<sup>9</sup> There has been stagnation of the perinatal mortality since then with the same rate reported by Directorate of Health Services (DHS) 2014. The introduction of free maternity services in all public healthcare facilities was an intervention aimed at achieving the governments' vision 2030 which sought to assure quality healthcare for all.<sup>10</sup>

The achievement of vision 2030 can only be realized by addressing perinatal outcomes such as still births and perinatal deaths which have continued to be a major challenge not only to the Kenyan nation but also to the world at large.<sup>10</sup> Whereas poor perinatal outcomes can be caused by a number of issues, they can be prevented if pregnant women can have access to healthcare facilities. This ensures that the essential obstetrics and newborn care which are critical for good perinatal and maternal outcomes are provided by skilled attendants during the pregnancy and childbirth.

In Kenya, maternal and new-born health especially in rural areas and resource poor settings is faced with challenges due to lack of proper public health infrastructure and the proximity of communities from health care facilities.<sup>11</sup> Mama Lucy Kibaki Hospital (MLKH) is the leading maternal healthcare facility in Nairobi's Eastland area. The hospital handles more than 650 maternity cases per month. The recent zero rating of maternity fees by the government has seen the number of pregnant women seeking services grow at a high rate. This is an indication of the fact that maternity fees were a major hindrance for women from poor household and therefore a contributor to the high poor maternal and perinatal outcomes as the women seek alternative methods of delivery from unskilled midwives. The general objective of the study was to determine perinatal outcomes following the implementation of free maternity services at MLKH in Nairobi County, Kenya. The specific objectives were to compare perinatal outcomes statistics before and after implementation of free maternity services, to determine the maternal characteristics of women seeking free maternity services, to investigate health provider and facility factors which contribute to perinatal outcomes at MLKH.

## METHODS

The study adopted a descriptive cross-sectional study design. Data was collected from mothers post-delivery, those delivered at 28 weeks gestation and above. The

research design helped to examine, analyze and evaluate the perinatal outcomes of free maternity services and the factors contributing to them. These included the maternal characteristics of women seeking the free maternity services, health facility factors and health provider factors. The dependent variables for the study were the perinatal outcomes which include among them live birth, prematurity, birth weight, Apgar score, and perinatal deaths.

The study was carried out at MLKH. A sub county hospital located along Kangundo road, approximately 9 km East of Nairobi's central business. MLKH is a referral hospital serving the residents of Nairobi's populous Eastland. It provides comprehensive and specialized health care services. The facility is located between Umoja, Komarock, Nasra estates and Kayole slum. The hospital has a bed capacity of 112.

The study population composed of all women who sought free delivery services in the hospital at the time of study. Monthly averages of 650 women were included in the sampling frame.

The study included women who had delivered at the hospital at the time of study and were willing to participate by signing a consent form. The study excluded women who delivered at the hospital but were extremely sick to answer the questions, women who may have had delivered but suffered mental challenges, women under other medical insurance covers as well as those who never sought free maternity services during the antenatal period. Data for the study was collected using structured questionnaires for the mothers and key informants' interviews for the nurses. A database designed using Statistical Package for Social Sciences (SPSS) version 23 containing of data from completed questionnaires was used to analyze the results. Ethical approvals were obtained from the ethics and review board of Kenyatta University and also from the National Commission for Science, Technology and Innovation (Kenya).

## RESULTS

The study found out that 6676 total deliveries had occurred in MLKH a year after the implementation of free maternity services, (June 2014 to May 2015) while 4732 deliveries had occurred for the same period before the implementation of free maternity services (i.e. June 2013 to May 2014). The total number of live births a year after the implementation of free maternity services was 6512, while the live births a year before the implementation was 4543. This study also found out that there were 57 and 60 fresh still births, 152 and 102 macerated still births, 98 and 82 birth asphyxia, 20 and 26 perinatal deaths, and lastly, 280 and 349 underweight babies before and after the implementation of the free maternity services at MLKH respectively. The researcher had difficulty in differentiating the number of fresh still births from the number of the macerated still births since in the DHS

reporting they were both generalized as still births, though the circumstances leading to the occurrence of both are very different. The actual figures were obtained from the hospitals maternity registers and the hospital records. The total deliveries and the birth outcomes before and after the implementation of free maternity services are shown in the table below (Table 1).

**Table 1: Deliveries and birth outcomes before and after the implementation of free maternity services at MLKH.**

	June 2012- May 2013	June 2013- May 2014
<b>Total deliveries</b>	4732	6676
<b>Total still births</b>	189	164
<b>Total FSB</b>	57	60
<b>Total MSB</b>	123	104
<b>Birth asphyxia</b>	98	82
<b>Underweight babies</b>	280	349
<b>Perinatal deaths</b>	20	26

#### *Utilization of free antenatal care by mothers*

The study sought to understand how the free maternal care was rated and utilized by mother who attended the facility. Their responses were recorded and tabulated in various tables in this section. They were further interpreted so as to obtain a wider view of the service. The study asked the respondents whether they attended antenatal clinic, and 99.1% of the respondents said they did. Only two respondents said that they had not attended any antenatal clinic. This could be attributed to the fact that the free maternity service was available and convenient to mothers during their pregnancy.

#### *Maternal trimester of antenatal care booking*

Most women 60.2% of the respondents who were interviewed had booked for their first antenatal clinic in their second trimester while 35.4% had booked for their first antenatal clinic in their third trimester. The study observed that only 4.4% of the respondents had booked for antenatal clinic in their first trimester.

Further, it was noted that though the maternity service were thought to be free 0.9% of the respondents had not attended antenatal clinic at all during their term of pregnancy.

The study also investigated the number of times the respondents had actually attended the antenatal clinic before they gave birth. It was noted that majority of the respondents 40.8% attended the antenatal clinics three times during their pregnancy, 25.4% had attended the clinic twice, and still 4.8% had attended the antenatal clinic once. Only 28.9% had visited the antenatal clinic four times and more as recommended by the World Health Organization.

#### *Maternal drug use and abuse*

The study observed that a huge proportion of the respondents 94.2% did not use drugs. Of interest were alcohol use, smoking and tobacco sniffing. Only 5.7% of the respondents reported to have been taking alcohol while pregnant.

#### *Maternal pre-existing disease/conditions suffered during pregnancy*

The study endeavoured to study the common conditions suffered by the respondents during their period of pregnancy. Majority of the respondents did not have any disease during pregnancy. The study noted that 9.6% of women suffered medical conditions during pregnancy. The results were tabulated as shown in the figure below (Table 2).

**Table 2: Maternal conditions and diseases suffered by respondent during pregnancy.**

Maternal disease in pregnancy	Frequency (N)	Percentage (%)
<b>Disease suffered</b>		
No disease	206	90.4
Anaemia	13	5.7
Hypertension	3	1.3
Malaria	2	0.9
HIV/AIDS	4	1.8
<b>Total</b>	<b>22</b>	<b>100</b>
<b>Disease treated</b>		
Yes	20	90.9
No	2	9.1
<b>Total</b>	<b>22</b>	<b>100</b>

#### *Maternal disease/conditions treatment*

In total 22 respondents representing 9.6% of all the responses were identified with one condition or the other. On whether the conditions suffered were treated, 90.9% of the respondents who were identified with either of the conditions were treated, while 0.9% of the respondents did not receive treatment. Of those not treated, the reasons for non-treatment were the cost implications in the purchase of the prescribed medicine. The two respondents who did not receive treatment suffered anaemia and unfortunately both gave birth to macerated still births.

#### *Duration from residence to the hospital*

The study sought to know approximately how long respondents took from their residence to the hospital, 79.4% of the respondents indicated that they had taken less than an hour to reach the hospital, 17% of the respondents indicated that they had taken between an hour and two to get to the hospital while 4.8% of the respondents took more than two hours to arrive at the hospital.

### ***Means of transport to the hospital***

The means of transport the respondents used to access the facility were as follows, 24.1% of the respondents indicated that they had used motorbikes as means of transport, 71% had used matatu 2.1% walked to the facility while 2.6% of the respondents has used private means.

### ***Average wait time between arrival at the hospital and examination***

The study further sought to know about the on average the duration of stay at the facility between the arrival and examination. The study showed that a majority of the respondents 51.3% had on average 30 minutes and less wait time before one get examined. The study also learned that 25.4% of the respondent had waited to be examined for between 30 minutes and two hours while 23% had waited for more than 3 hours before they were examined.

### ***Availability of resources (equipment supplies and nurses)***

The availability of supplies and equipment information was obtained from the key informants. All of the key informants (100%) stated that the supplies were inadequate most of the time and essential equipment to include foetal monitoring equipments were not available at all. Nurse-patient ratio was cited by the key informants as 1:10 far below the required standard by WHO nurse-patient ratio of 1:1 in maternity wards. The study also sought the patients' view of the state of the hospital's equipment and supplies. The study showed that 87.3% held the view that the facility did not have adequate equipment and that supplies were inadequate. The major areas that were cited by the respondents were lack of beds hence patients were sharing beds and even some patients sleeping on the floor post-delivery, lack of beddings, patients gowns and even the presence only one toilet were other areas of the respondents concern. Despite the identified challenges, the study showed that majority of the respondents 77.6% rated the free maternity as excellent while a small percentage 22.4% of them felt that free maternity services were poorly executed.

### ***Knowledge and skills of the nurses providing care***

Majority of the respondents were satisfied with the nurses' knowledge and skills in the provision of crucial maternal care. In that regard, more than three quarters (85.9%) of the respondents were in agreement that nurses were adequately knowledgeable and skilful to perform their work.

A small percentage (14%) held a contrary opinion. The satisfactory knowledge and skills was also reported by more than three quarters of the key informants with 90% of the nurses reporting that they had been in the maternity department for a period of more than 3 years and also majority (93%) of them reported that they had been trained on maternal and neonatal care in the last one year.

### ***Provision of health information to the expectant mothers***

The study was determined to know whether expectant mothers were furnished with necessary health information about themselves and their fetus such as: the danger signs in pregnancy, importance of keeping appointment dates, birth preparedness and general hygiene and safe environment, healthy and balanced diet as well as exercises among others. The study learnt that a vast majority 99.6% had received all the necessary information regarding their own health and that of the unborn.

### ***Tests done and recommendation to expectant mothers***

In the interest to know the actual tests done or recommended to the expectant women, the study sought to enumerate the various tests done on them as well as the ones recommended to them. The tests forms a solid ground for the doctors and nurses to appropriately inform and advice the expectant mother on the various aspects of her lifestyle of habits that are critical at the time. According to the informants guide data it was observed that some critical conditions suffered by the mothers during their pregnancy are testable. It was noted that 1.7% of the mothers had not done the basic required antenatal tests that women are required to undergo during the antenatal clinic attendance though the tests were available at the facility. The respondents reported that the cost involved in the lab investigation was a barrier for them to have the investigations done.

### ***Administration of preventive therapy and provision of physical examination***

Respondents were asked whether they had received any preventive therapy in their ANC visits to include among them tetanus (TT) dose, intermittent preventive treatment (IPT), insecticide-treated bed nets (ITNS), de-wormers, iron-folic acid (IFAs), and anti-retrovirals (ARVs) majority 99.6% were in agreement of having received preventive therapy. Below is a summary of the responses.

### ***Perinatal/birth outcomes of the study respondents***

#### ***Mode of delivery***

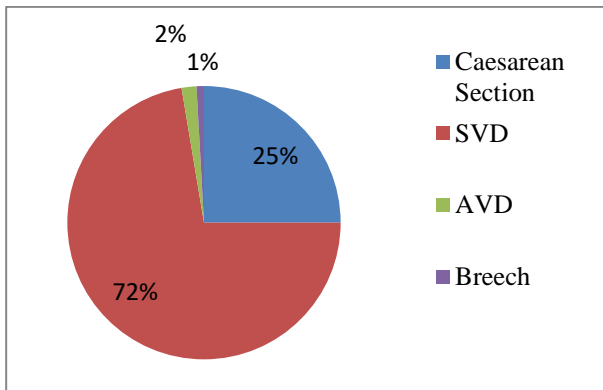
The study showed that 25.0% of the respondents delivered through caesarean section, while nearly three quarters of the respondent's 72.4% had spontaneous vertex delivery, 1.7% deliveries were assisted vaginal deliveries and 0.9% gave birth via spontaneous breech delivery (Figure 1).

#### ***Infant status at birth***

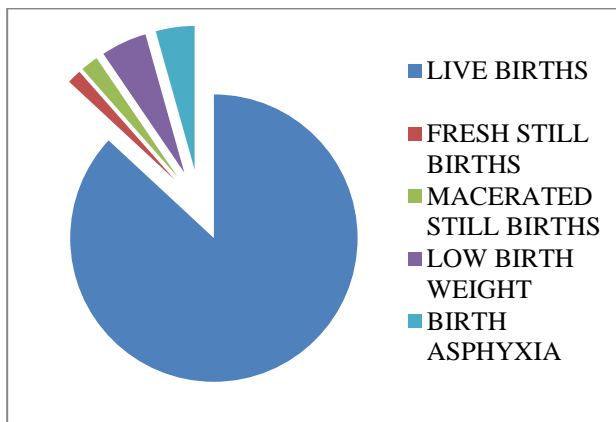
The study observed that 96.05% of the respondents had babies born alive while 4% had babies born dead. Among the ones who were delivered dead were 40% macerated stillbirth and 55.6% fresh stillbirth. Birth outcomes were further examined for weights and it was revealed that 5.7% of the respondent's babies recorded low birth weights and

were admitted into the newborn units for further management.

The study was able to establish that 95.6% of the infants born alive had an Apgar score of between 8 and ten which is considered normal for a newborn. The study further established that 5% of the respondent's babies registered a low Apgar score of less than 6 in ten minutes and were admitted to the new born unit. The total respondent's babies with poor outcome were 22. some babies had multiple poor birth outcomes for instance some were underweight and also scored poorly. No perinatal death was recorded at the time of the study (Figure 2).



**Figure 1: Respondents' mode of delivery.**



**Figure 2: Perinatal/birth outcomes.**

**DISCUSSION**

**Comparison of perinatal outcomes before and after implementation of free maternity services**

A comparison of the perinatal outcomes one year pre and post the introduction and the implementation of the free maternity services (FMS) revealed that there was a sharp rise in the total number of women delivering at the facility post the implementation of the free maternity services. The total deliveries increased by 41% from 4732 deliveries before implementation to 6676 deliveries after the implementation of the free maternity services. There was also an increase in the number of the positive perinatal

outcomes, where the number of babies born alive was noted to have increase by 43% from 4543 LB before implementation of free maternity services to 6512 LB after the implementation of the free maternity services. The perinatal poor outcomes also reduce by 15, 16, 9, and 8 per 1000 LB for the perinatal stillbirths, perinatal deaths, perinatal birth asphyxia and perinatal under weight's respectively. The study results on the outcomes agreed with a systemic review of user fee impacts which was conducted in Ghana and revealed that removing maternity user fee increased utilization of maternal services, and lead to increased positive outcomes usually in the form of one sharp rise.<sup>9</sup> The study findings also agreed with the report by Ministry of Health (MOH) Kenya which noted that there was an increased delivery together with improved birth outcomes a year of initiating FMS in Kenya.<sup>7</sup>

**Maternal characteristics of women seeking free maternity services at MLKH**

The researcher studied the maternal characteristics of women who sought free maternity services at the hospital. The characteristics of interest included maternal health-seeking behaviour. The study learnt that most of the women were seeking their first antenatal care in their second trimester, and only few had sought their antenatal care services early in pregnancy. A 35.4% had sought their ANC in their third trimester, and still two respondents had not attended ANC at all, and unfortunately the two got macerated stillbirth (MSBs). Concerning the number of visits the study noted that only a few women 28.9% visited the clinic four times and above as recommended by the WHO. The study also revealed that most mothers seeking free maternity services in the facility did not take drugs, only a few reported to have been taking alcohol. The common maternal disease was anaemia, while none of the respondents had suffered diabetes. A significant number of those affected by anaemia gave birth to poor perinatal outcomes which were mostly low birth weights. The findings of this study on the relationship between the maternal characteristics and health seeking behaviour agreed with a study by Lindsay on anaemia and iron deficiency effects on pregnancy outcomes which concluded that maternal iron deficiency increased the risk of preterm delivery and subsequent low birth weight.<sup>10</sup>

**Health facility/provider factors that contribute to perinatal outcomes in FMS**

Health facility and health provider factors can significantly contribute to both maternal and perinatal outcomes. The study found out that the hospital is very convenient in terms of accessibility. A majority of the respondents reported to have had taken less than one hour to reach to the hospital, while a small percentage reported to have taken more than 2 hours to reach to the hospital. Majority 71% used Matatu while another huge percentage had used motorbikes. The hospitals physical access leads to the increased number of women seeking delivery services. The

findings concurred with a study on determinants of utilization of maternity services in Nepal which concluded that, improved physical access enhances both the use of antenatal care and delivery services by a trained health care provider.<sup>11</sup>

The study found out from the respondents that the hospital lacked beds and linen. All the respondents indicated that they shared beds and other necessary resources. The key informants confirmed the scarcity of the materials and equipment's in the facility. The equipment's lacking included monitoring machines for both the mothers and the foetus. It was also reported by the key informants that the hospital had occasionally lacked the key supplies to include gloves and the essential medicines. The shortage of supplies, equipment's and workforce was cited by the key informants as the biggest challenge in the implementation of free maternity this was attributed to the large number of mothers being admitted at the maternity unit.

The study found out that 99% of the study participants had received health information through health talks provided by the nurses in the ANC, regarding their health during pregnancy. Such information included danger signs in pregnancy, nutrition hygiene, the importance of attending the antenatal clinic, birth preparedness and the importance of hospital delivery among others.

The study also found out that, the basic antenatal profile was requested for all the antenatal clients and done by the majority except a two percent of the clients who did not have their antenatal profile done and reported that they did not have the money for the investigations. The cost implications in health care here were cited to be an obstacle in the provision of quality care to the clients.

The study further found out that a full head to toe examination which is required for every client so as to screen for unnoticed problems that the patient might not be aware of was not being done and their physical examination was reported to have been focused on the abdomen alone. The study noted a limitation in the provision of full head to toe examination as only a small proportion of the respondent had. Failure to conduct full examination was cited by the key informants to have been contributed by the nurses' shortage. Most of the respondents received preventive therapy where applicable.

The study also sought to understand the respondent's opinion regarding the knowledge and altitude of the nurses attending them. Majority of the respondents reported that the nurses were very knowledgeable and the very knowledgeable fact was also reported by the key informants, who reported that Most of them had been in the maternity for more than three years and had at least attended an update on the maternal new born health in the past one year. Their experience and knowledge was attributed to the good perinatal outcomes.

## CONCLUSION

The study concluded that, introduction of free maternity services in Kenya led to an increase in the number of women seeking maternal and child health services and subsequently led to improved perinatal outcomes. The study concluded that free maternity services provided relief to many needy women especially in the slum areas which could otherwise not have afforded the user fee levied in health facilities.

Many women were found to seek maternal services in the second and third trimesters thus not attaining the requisite number of antenatal visits. A significant population relies on means of transport that could have an impact on perinatal outcome.

Most women with other pre-existing medical conditions and who were examined were put on medication and a proper follow up program initiated. Some medical personnel did not do antenatal profile on some women attending hospital for maternal services.

Staff and equipment are heavily strained while supplies remain constant for an extended duration. That led to strain on nurses providing care as they work for long hours and quality of care lowered.

## ACKNOWLEDGMENTS

The authors would like to acknowledge Prof. Margaret Keraka and Dr. Olivia Wesula for their relentless support, encouragement and timely advice during this work. Secondly, they would like to pass their sincere gratitude to the employer, the MOH, Department of Medical Services Nairobi County, and specifically the former nursing services manager of MLKH for their support.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Kainde M, Adela MM. Perinatal outcomes of free maternity services in Mama Lucy Kibaki Hospital, Nairobi County, Kenya. *Int J Community Med Public Health* 2020;7:3860-6.